

WEB BASED PERSONAL DIRECTORY

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Field of the Invention

This invention is a continuation-in-part of co-pending U. S. Serial Number 09/054,681 filed April 3, 1998 the entire disclosure of which is herein incorporated by
10 reference. This invention relates in general to interactive voice response systems and, in particular, to such systems having personal directories stored on a web site.

Background of the Invention

Telephone companies have long offered directory assistance service. A typical
15 caller dials a special number, such as "411" for directory assistance. Often the caller who requests assistance is connected to an operator. Recent advances in voice recognition systems permit 411 services to connect the caller to a voice recognition computer. The computer has a store of digital files, including prompts for the caller. In response to information provided by the caller, the voice recognition system either
20 identifies the requested subscriber phone number or passes the call to an operator.

The operator and the voice recognition system have access to one or more computers that store the telephone numbers for local and long-distance subscribers. Subscriber telephone numbers are stored in accordance with subscriber data. Such data includes the name of the subscriber and the subscriber location including street address,
25 city or town, and state. After the 411 service acquires the requested phone number, the number is usually automatically announced to the caller. The announcement is a computer-generated voice signal that gives the caller the requested subscriber phone number. Advances in directory assistance technology allow the directory assistance equipment and its caller to interact. Now a caller can choose to let the directory
30 assistance equipment automatically place the call to the requested phone number. The announcement directs the user to press a specified key on the telephone pad or say "yes" if the user wants the directory assistance equipment to dial the number. Often there is a charge for automatic connection.

After a customer pays for directory assistance, the customer may manually make a permanent record of the desired number in a personal directory. The directory may be a book, part of a personal organizer, digital assistant, or in a database that stores information on a computer. Some frequently called numbers may be stored in the telephone where they can be selected for speed dialing. Selecting a programming key on the telephone to access the feature normally activates a conventional speed-dialing feature. Then the desired number is dialed into the telephone and becomes associated with an abbreviated dialing code. When the user wants to call the desired number, the dialing code for the desired number is dialed instead of the actual number. The telephone set generates a series of DTMF tones that correspond to the desired number.

If the customer fails to make a permanent record of the desired number, he may have to make a second directory assistance call to find the number. Personal directories can be lost or the data stored in a personal organizer or digital assistant may be accidentally deleted. Telephone sets with speed dialing have limited storage capacity. Perhaps as many as twenty numbers can be stored on a telephone. However, the information in a personal directory and the speed-dialing ability of one phone is useless if the customer does not have his directory or is away from the programmed telephone. For example, the customer may forget to take his personal directory on a trip. Again, the customer is faced with placing a directory assistance call to acquire the desired number.

Summary of the Invention

The invention is a public network based personal directory system. It includes a translation server for interfacing the telephone set with a site on a computer network that holds frequently dialed numbers of the caller. When calls are made from the caller's own telephone number, a caller identification module in the translation server identifies an address on the computer where the caller's personal directory is stored. As an alternative, the caller may dial a special access number from other locations. Upon entry of an authorization code, the caller is then connected to his personal directory.

The directory is a site on a computer network, such as the Internet. Private networks may also be used, but using the Internet reduces administrative costs. Each subscriber to the personal directory service has a home page at a site located on the World Wide Web. The translation server includes a voice recognition or DTMF module
5 for converting the caller's voice to commands. It also has a text-to-speech module that includes a programmed series of prompts and responses for assisting the subscriber. The subscriber gives his name and/or authorization code. The translation server converts them into the universal resource locator address that corresponds to the identified subscriber. A server locates the web site that includes the home page of the
10 subscriber. Then the subscriber requests the number of one of the names in his personal directory. The voice recognition module converts the spoken name into a home page search request and locates the desired number. Upon confirmation, the translation server passes the call to the telephone network and the network rings the desired number.

15 The switch receives a telephone call from a caller who requests his personal directory. Dialing a special telephone number does this. The personal directory system has a voice path to the caller through the switch and assumes control of the call from the switch. The personal directory has computer-based equipment that includes one or more memories that store and retrieve a list of home pages for personal directory subscribers.
20 Each subscriber home page has a list of the subscriber's frequently dialed phone numbers and corresponding speed dial codes.

In the preferred embodiment, the home pages are stored on a site located on the Internet. The telephone company that provides the personal directory service maintains that site.

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Brief Description of the Drawings

Figure 1 is a schematic description of the personal directory system.

DETAILED DESCRIPTION

Figure 1 shows a personal directory system 10. There are a number of subscribers 12, 14 who can call other subscribers 32, 34. The subscribers are part of a telephone network 100 that includes one or more switches 20. The switches 20 connect one of the calling subscriber 12, 14 to one of the called subscriber 32, 34 in a conventional manner. Those skilled in the art will understand that the telephone network 100 is representative of local, national, and international telephone systems and combinations of such systems. The following explanation will assign certain functions and operations to a telephone company. Those skilled in the art will understand that the telephone company may be any one of the many companies that now provide telephone services, including wired and wireless service.

The telephone network 100 is interfaced and coupled to a computer network 50 via a translation server 40. The translation server 40 is a computer with a central processing unit 47, a memory 48 that includes random access memory, read only memory and mass storage memory. Included in the mass storage memory are addresses of the personal directories of the subscribers 12, 14. The translation server 40 receives calls from subscribers 12, 14 seeking their personal directory. The server 40 has a caller identification module 41 or program that recognizes the telephone number of the calling subscriber 12, 14. The server 40 then compares the identity of the caller to a number of universal resource location addresses that are stored in its memory. When the server 40 matches the caller 12, 14 to the URL corresponding to the caller, the server accesses the URL on the computer network 50.

The computer network 50 is typically a wide area, public access network, such as the World Wide Web (WWW) of the Internet. The Internet 50 has one or more personal directory servers 60 that hold the URLs of the addresses stored in the translation server. Each server 60 has a central processing unit (CPU) 67 and memory 68 (RAM and ROM) for holding operating and applications programs and data corresponding to homepages 61, 62 of subscribers 12, 14. Upon accessing the

homepage, the server 60 searches for the telephone number desired by the subscriber and transmits the number to the translation server 40 over the WWW 50.

Each home page 61, 62 stores a personal directory of the respective subscribers 12, 14 along with speed dial codes for each entry. For example, the subscriber may
5 store the number of a first-called party 32 with a speed dial code, such as *88 and the telephone number of a second called party 34 with speed dial code *92. The stored number is supplied to the switch 20 to complete the call.

Translation server 40 has several user-friendly modules to assist callers 12, 14. These modules include a voice recognition module 42 and a text-to-speech module 44.
10 The modules include analog-to-digital converters for input voice signals into digital signals that can be recognized by voice recognition module 42. Likewise, the analog-to-digital converters convert digital signals corresponding to text from the URL locations to voice signals so that the caller will receive the desired number and speed dial code. A telephone company that operates the telephone network 100 maintains the personal
15 directory server 60. Operators 70 and individuals with a Web browser 72 can access the Web site 60 to update the individual homepages 61, 62. The operators 70 can update the speed dial codes associated with the numbers found on the homepages 61, 62.

In operation, a caller 12 dials a personal directory telephone number for the translation server 40. When the server 40 answers, its caller identification module
20 recognizes the calling party as subscriber 12. The caller identification module 41 verifies that the calling party is a subscriber to the personal directory service. The identity of the subscriber is verified by the subscriber supplying a password or by other conventional means. The server 40 looks up the URL for caller 12 and accesses the homepage 61 on the personal directory server 60. The translation server 40 then
25 executes a series of voice prompts and responses to ascertain the identity of the party the subscriber 12 is calling. For example, the server 100 will begin with a voice prompt such as "Please tell me the name of the party you are calling." In response, the subscriber speaks the name of subscriber 32. Let us assume the name is "Don North." The voice recognition module 42 translates the spoken name of the subscriber into
30 digital signals corresponding to the names on the directory of homepage 61. The server

60 provides the telephone number and/or the speed dial code of the called party 32 to the switch 20. The translation server 40 issues a confirmation voice prompt, such as "Confirm that the party you are calling is Don North by pressing 1" and the server 40 passes the number to the switch 20 which dials Don North's telephone number. The translation server 40 in any voice operated Internet protocol (VOIP) or switch 20 in the public service telephone network (PSTN) network dials the number of Don North.

Having thus described the general embodiments of the invention, those skilled in the art will appreciate that further changes additions, alterations and deletions may be made to the embodiments without departing from the spirit and the scope of the invention as set forth in the following claims. Those skilled in the art understand that the switch 20 is found in existing equipment such as the DMS 100/200 manufactured by Northern Telecom. Those skilled in the art will also appreciate that the disclosed system may also include a directory assistance system that locates desired numbers and then stores the located number on the personal directory of the subscriber.